

CERTIFICATION OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY THAT THIS PAPER IS BEING FACSIMILE TRANSMITTED TO THE PATENT AND TRADEMARK OFFICE ON THE DATE SHOWN BELOW.

Deanna Sullivan

TYPE OR PRINT NAME CERTIFYING CERTIFICATION
 SIGNATURE: *Deanna Sullivan* 5-29-98
 DATE

Approved 6-15-98 *gm*

Fig. 23

Example 12								
TEST RESULTS ON COPPER-CLAD EPOXY GLASS, GLASS POLYIMIDE, AND POLYIMIDE								
Sample	Via Diameter (μm)	Speed (mm/s)	Bite Size (μm)	Rep Rate (kHz)	# Passes	Taper (μm)	Throughput (holes/sec)	
1	102	8	--	3.2	15	12	1.7	
2	51	3.2	--	1.6	10	12	2.4	
3	102	7.8	--	3.1	5	12	4.4	
4	51	3.2	--	2.1	2	12	7.8	
5	25	N/A	--	4	100 pulses	12	15	
6	102	7.6	--	1.5	6	12	3.8	
7	51	3.2	--	1.6	4	12	5.3	
8	102	8	--	+5	10	12	2	
9	51	3.2	--	+20	1	12	3.7	


Fig. 24

Power Density = Fluence/Pulse Width

	Average Power	Spot Size Diameter	Spot Size Radius	Repetition Rate	Spot Area	Spot Area	Power/Rep. Rate	Fluence	Power Density	
	mW	micro-m	micro-m	Hz	m ²	cm ²	J	J/cm ²	@40 ns	@90 ns
Example 12										
Sample 1	225	25	12.5	3200	4.91E-10	4.91E-06	7.03E-05	14.32	3.58 x 10 ⁸	1.59 x 10 ⁸
Sample 2	225	25	12.5	1600	4.91E-10	4.91E-06	1.41E-04	28.72	7.18 x 10 ⁸	3.19 x 10 ⁸
Sample 3	225	25	12.5	3100	4.91E-10	4.91E-06	7.26E-05	14.79	3.70 x 10 ⁸	1.64 x 10 ⁸
Sample 4	225	25	12.5	2100	4.91E-10	4.91E-06	1.07E-04	21.79	5.45 x 10 ⁸	2.42 x 10 ⁸
Sample 5	225	25	12.5	4000	4.91E-10	4.91E-06	5.63E-05	11.47	2.87 x 10 ⁸	1.27 x 10 ⁸
Sample 6	225	25	12.5	1500	4.91E-10	4.91E-06	1.5E-04	30.5	7.63 x 10 ⁸	3.39 x 10 ⁸
Sample 7	225	25	12.5	1600	4.91E-10	4.91E-06	1.41E-04	28.72	7.18 x 10 ⁸	3.19 x 10 ⁸
Sample 8	225	25	12.5	5000	4.91E-10	4.91E-06	4.5E-05	9.16	2.29 x 10 ⁸	1.02 x 10 ⁸
Sample 9	225	25	12.5	20000	4.91E-10	4.91E-06	1.13E-05	2.30	5.75 x 10 ⁷	2.56 x 10 ⁷